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TECHNICAL REPORT NO. 74-12

PORTABLE SIGN MAKING KIT

by

Norman P. Leibel

Environment and Survival Branch

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BLDG. 305

February 1974 ABERDEEN PROVING GROUND, MD.
STEAP-TL

Final Report for period August 1971-1972

COUNTED IN

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U. S. ARMY LAND WARFARE LABORATORY

Aberdeen Proving Ground, Maryland 21005

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REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER Technical Report No. 74-12	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Portable Sign-Making Kit		5. TYPE OF REPORT & PERIOD COVERED Final Report
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Norman P. Leibel		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS US Army Land Warfare Laboratory Aberdeen Proving Ground, Md. 21005		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS LWL Task 02-S-72
11. CONTROLLING OFFICE NAME AND ADDRESS		12. REPORT DATE
		13. NUMBER OF PAGES
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report) UNCLASSIFIED
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved For Public Release; Distribution Unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES TECHNICAL LIBRARY BLDG. 305 ABERDEEN PROVING GROUND, MD. STEAP-TL		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number)		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) In response to a letter from the US Army Combat Developments Command Military Police Agency in May 1971, the US Army Land Warfare Laboratory (USALWL) developed a Portable Sign-Making Kit for use by Military Police units. The kit consists of sign backing-material, stencil boards, sign facing material, reproduction material, inks, tapes and vinyl letters. The kit contains sufficient materials to fabricate approximately 100 signs and 75 percent of the components are replenishable through normal supply channels. As requested		

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BLOCK 20. ABSTRACT CON'T

by the US Army Combat Developments Command Military Police Agency, Fort Gordon, Georgia, 10 kits were shipped by various Military Police Agencies for field evaluation. The results of the field evaluation were highly favorable and the Military Police Agency recommended that the kit be adopted for procurement through normal supply channels. The results of these evaluations are included as Appendixes to this report.

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E. Letter, ARWPM, Office of the Provost Marshal, 22 March 1973, subject: Field Evaluation of Portable Sign-Making Kit	
F. Letter, SCARPAA-CF, 227th Military Police Department (Stockade), 6 July 1973, subject: Field Evaluation of Portable Sign-Making Kit	
G. Letter, AJBMP-AL, 503d Military Police Battalion, 25 April 1973, subject: Field Evaluation of Portable Sign-Making Kit	
H. Letter, AFZNMP, 1st Military Police Company, 1st Infantry Division (Mech), 15 August 1973, subject: Test and Eval- uation of Portable Sign-Making Kits	
I. Letter, AIBA-720-CDR, 720th Military Police Battalion, 31 May 1973, subject: Evaluation; Portable Sign-Making Kit	
J. Letter, AFZI-ZBD, 519 Military Police Battalion (Army), 21 August 1973, subject: Test and Evaluation of Portable Sign-Making Kit	

DISCUSSION

Introduction

As requested by the US Army Combat Developments Command Military Police Agency, the US Army Land Warfare Laboratory (USALWL) initiated a task to provide the Military Police with a portable sign kit which could be used for the rapid fabrication of signs. The sign kit which was developed is simple to use and does not require extensive prior training. The use of the components contained in the kit are described and shown on the instruction sheet attached to the lid of the carrying case. These instructions also contain the Federal Stock Number where applicable and the recommended supply source of the items not available through normal supply channels.

Description of the Portable Sign-Making Kit

The sign kit developed by USALWL is packaged in an olive drab reusable, fiber-glass case measuring 28" x 29" x 13" high. The case, Figure 1, was manufactured according to military specifications. The top half of the case contains the following components (Figure 2):

- | | |
|--------------------------|-------------------------|
| 1. Sign-Backing Material | 3. Sign-Facing Material |
| 2. Stencil Board | 4. Rubber Letter Set |

The bottom half of the case contains the following components (Figure 3):

- | | |
|----------------------|-------------------|
| 5. Double Faced Tape | 12. Ink |
| 6. Staples | 13. Scissors |
| 7. Spray Ink | 14. Hammer |
| 8. Ruler | 15. Stapling Gun |
| 9. Reflective Tape | 16. Roofing Nails |
| 10. Utility Knife | 17. Vinyl Letters |
| 11. Lettering Guide | 18. Ink Marker |

Components

Sign-Backing Material: White Polyethylene panels measuring 20" x 24" can be used to fabricate signs with the 4" or 6" vinyl self-adhesive letters provided in the kit. The panels can be cut to the desired shape by using either the utility knife or scissors. The panels can be stapled or nailed to wooden surfaces or attached to masonry surfaces with double-backing tape. Red reflective tape is provided to highlight signs or provide reflective outline. The polyethylene panels are also used as a semi-rigid backer for the reflective sign-facing material.

Stencil Board: The stencil board can be used to fabricate various signs, symbols and battalion crests. Using the spray ink, included in the kit, or stencil paint if available, attractive signs can be transposed to most surfaces. Sign originality depends primarily on the imagination and initiative of the user.

Sign-Facing Material: Reflective panels measuring 16" square are included for fabricating signs required during night operations. These panels, highlighted with red reflective tape, are highly reflective when a light beam is directed on a panel. Signs fabricated on these panels can be stapled, nailed or taped to various surfaces. If a rigid backing is required, reflective panels can be taped to the white polyethylene panel using the double faced tape included in the kit.

Rubber Letter Set: Signs can be quickly fabricated using the rubber letters by laying the letters on the reflective sign-facing material, wooden surfaces or other paper if available and spraying directly over the letters. Since the paint dries upon contact, the letters can be removed immediately.

Double Faced Tape: This tape is used to secure signs to glass, metal, masonry or other surfaces that will not accept nails or staples.

Staples: The staples are used for attaching signs to wooden surfaces.

Spray Ink: The spray ink is used primarily with the rubber lettering set but can be used with the stencil board. Since the ink dries immediately after contact with the surface, the letters and stencils can be removed immediately after spraying, however, this paint will not adhere to the sign-backing material.

Ruler: The ruler is included in the kit for aligning the letters and preparing the stencils.

Reflective Tape: The reflective tape is used to highlight the signs to fabricate directional arrows to make simple letters.

Utility Knife: The utility knife is used for cutting stencils, sign-backing material and fabricating letters from reflective tape or vinyl letters.

Lettering Guide: The lettering guide is used with the stencil board for fabricating the letters and numerals.

Ink: The ink is used for filling the ink markers.

Scissors: The scissors are used in fabricating and trimming signs and letters.

Hammer: The hammer is used to install signs.

Stapling Gun: The stapling gun is used for attaching signs to various surfaces.

Roofing Nails: The sign backing material can be attached to poles, trees or any other wooden surface with the roofing nails. Sign backing material will withstand high winds if attached with these nails.

Vinyl Letters: The vinyl letters have a self-adhesive back which will adhere to most surfaces. They can be professionally aligned by simply matching the notches provided along the edge of the letters.

Ink Marker: Signs not requiring professional quality can be rapidly constructed using the felt tip ink marker. These signs could be used, for example, to convey troop information.

CONCLUSIONS

1. The sign-making kit meets the military characteristics expressed by the US Army Combat Developments Command Military Police Agency's letter dated 20 May 1971 (Appendix A).
2. All except four of the nineteen items comprising the sign kit are replenishable through normal supply channels.
3. The sign kit can be used by individuals to fabricate professional quality signs with a minimum of training. Initiative and imagination on the part of the user will play an important role in fabricating numerous sign variations.
4. The sign making kit could be utilized to fabricate signs during Civil Disturbances.
5. The kit has been well received by units conducting the evaluation. (The US Army Combat Developments Command Military Police Agency has recommended that the kit be adopted for use by the US Army.)

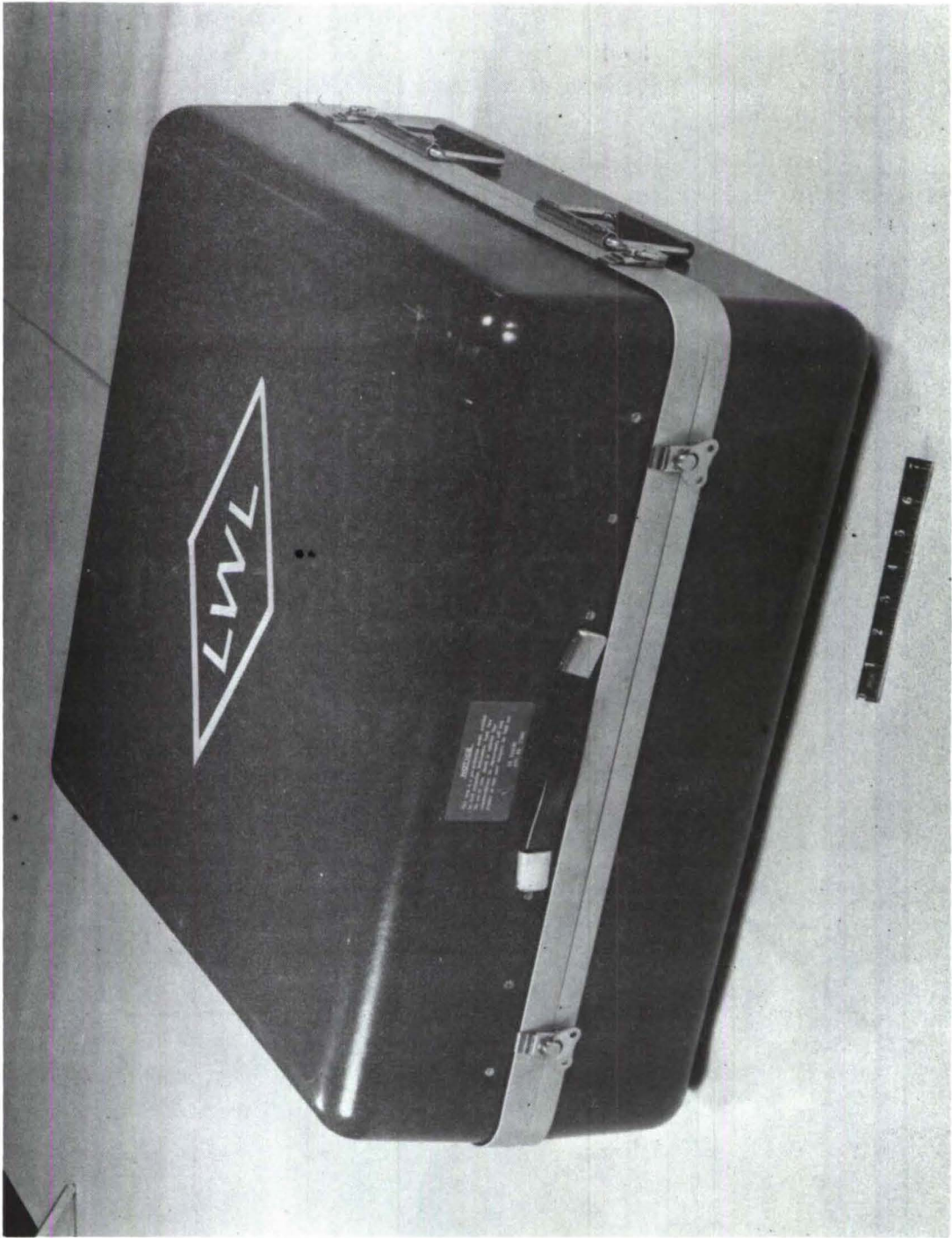
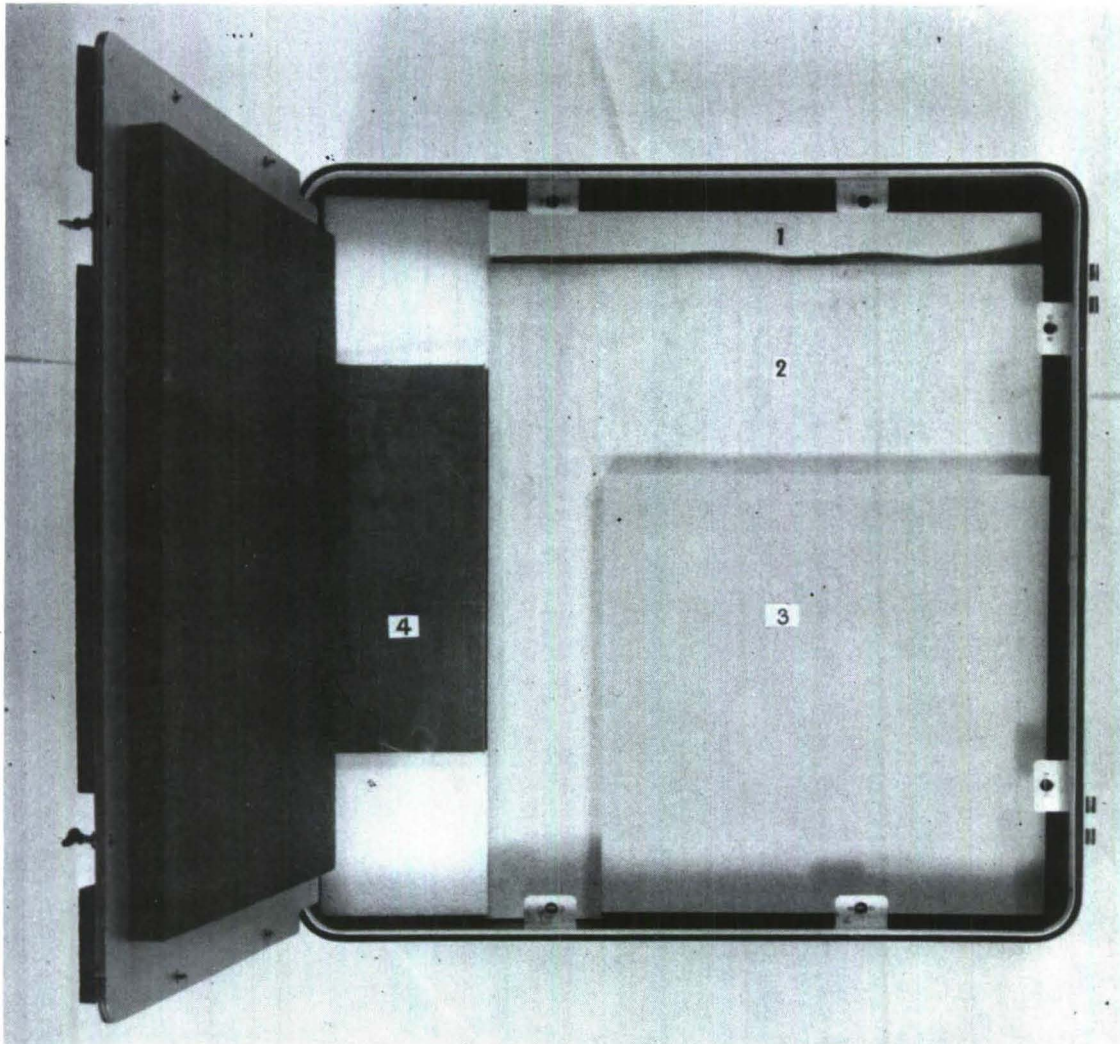


Figure 1. Portable-Sign Making Kit



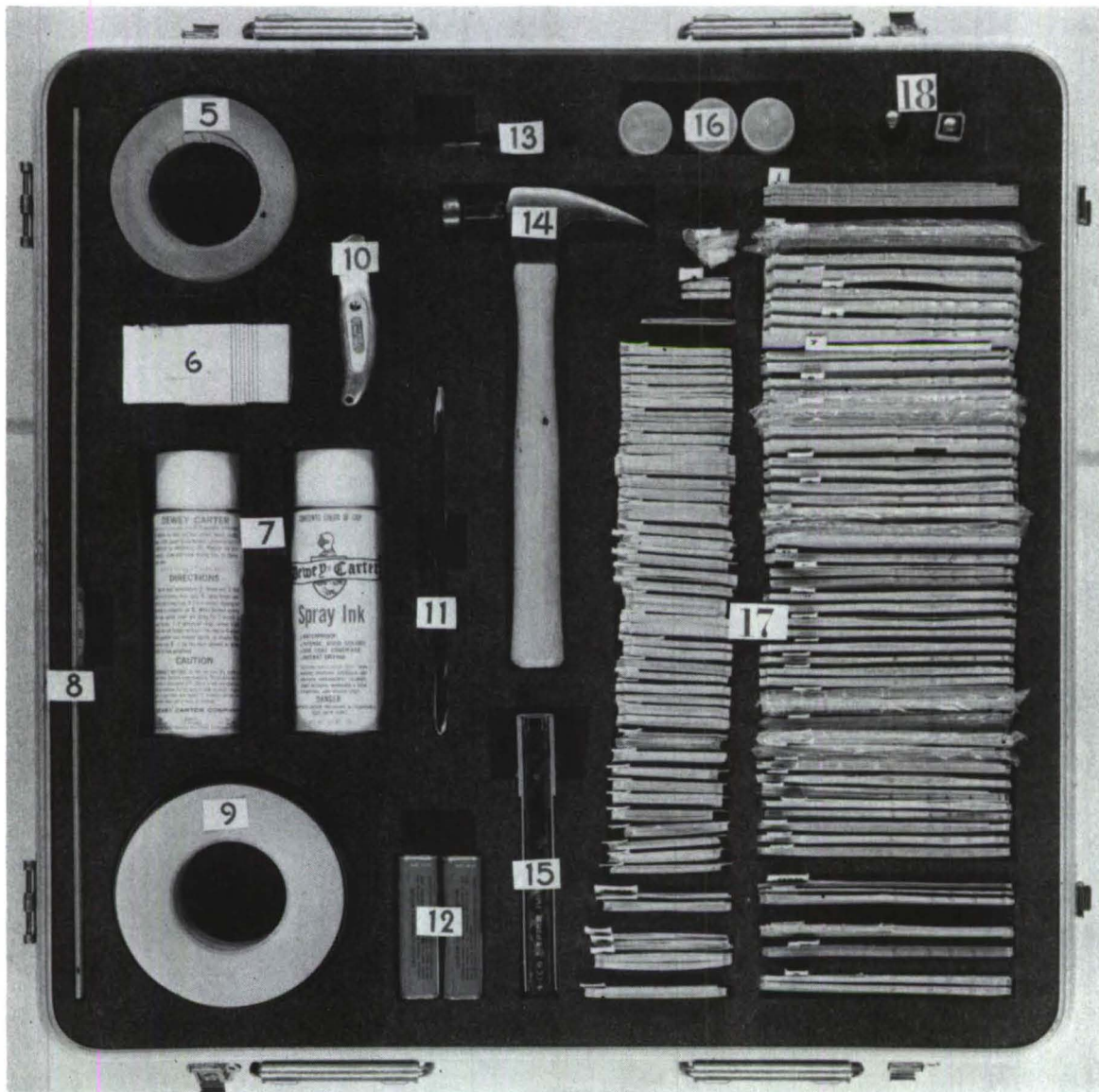


Figure 3. Bottom of Portable Sign-Making Kit Showing Components



APPENDIX A

DEPARTMENT OF THE ARMY LTC Baldwin/st/630-1800-
UNITED STATES ARMY COMBAT DEVELOPMENTS COMMAND 4747
MILITARY POLICE AGENCY
FORT GORDON, GEORGIA 30905

20 MAY 1971

CDCMP-M

SUBJECT: Proposed Projects


Commanding Officer
US Army Land Warfare Laboratory
Aberdeen Proving Ground, Maryland 21007

1. Request that your Command evaluate the attached proposed projects for possible inclusion within LWL programs. There is a need for the proposed projects within the Army Family of Equipment.
2. These proposed projects have been discussed informally with members of your staff.

FOR THE COMMANDER:

2 Incl
as (trip)

Copy furnished:
CG, COMS Gp, ATTN: CDCCOMSS-CM


GEORGE R. BALDWIN
LTC, MPC
Chief, Materiel Division

CRDLNL-9C (20 May 71) 1st Ind
SUBJECT: Proposed Projects

HQ, US Army Land Warfare Laboratory, Aberdeen Proving Ground, Maryland
21005 20 SEP 1971

TO: Commanding Officer, US Army CDC Military Police Agency, ATTN: CDCMP-M
(LTC Baldwin), Fort Gordon, Georgia 30905

1. As a result of a review of the proposed projects inclosed in the basic letter, this Laboratory has initiated two (2) tasks:

- a. 02-S-72 - Portable Sign-Making Kit, and
- b. 01-M-72 - Portable Pumping System.

A fact sheet (Inclosures 3 and 4) on each of the LNL tasks is included for your information and retention.

2. Your Command will be kept informed of the status of these two (2) tasks as work progresses.

4 Incl
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1 and 2 wd
Added 2 incl
3. Fact Sheet 02-S-72
4. Fact Sheet 01-M-72

RICHARD L. CLARKSON
Colonel, GS
Commanding

CF:
DARD-DDS w incl

PORTABLE SIGN-MAKING KIT

1. There is a need for a Portable Sign-Making Kit to replace the Reproduction Set, Silk Screen Process: Sign Reproduction. This kit should be of such size and weight that one person can transport it. The following are essential or desired characteristics of the kit:

a. Characteristics.

✓(1) (Essential) Component items of the complete assemblage will include, as a minimum, the following:

(a) Carrying case. The dimensions of the carrying case will be such that it can be loaded in or on a standard 1/4-ton utility truck equipped with machinegun pedestal mount and AN/VRC-47 radio set, without modification of the vehicle. This is one of the basic requirements necessary to make the kit truly portable. Configuration in this size will eliminate the necessity of using a larger vehicle to transport the kit.

(b) Sign-backing material. The sign-backing material must be of minimum intrinsic value and must be of sufficient rigidity to remain functional in winds of 25 miles per hour, with gusts of 40 MPH. This requirement is imposed in order to reduce the cost of the components yet provide optimum usage in ambient weather conditions with minimum weight of items.

(c) Sign-facing material. Precut, pressure sensitive sign-facing material (numerals and letters of the alphabet) will be included that will permit fabrication of general types of signs. These components are needed to fulfill the requirements of various types of units giving them the capability to economically produce specific types of signs for mission accomplishment.

(d) Sign-painting device(s). Felt tipped pen(s) or other suitable device(s), together with necessary accessories, will permit design and construction of signs other than those indicated in (c) above. As a general statement, this capability is necessary to obtain the capability of imparting basic, essential information, and is not intended to attain the capability of designing and constructing elaborate or complicated works of art.

(e) Accessories. Accessories will include a staple gun with sufficient pressure to secure the sign-backing material to a wooden stake, and tape with adhesive qualities on both sides which will enable prepared signs to be affixed to manmade structures (e.g., metal poles and

masonry buildings) and natural features (e.g., rocks). Such other accessories will be included as required to provide an assembled kit with a self-contained capability on a selective basis, for use by one man, unassisted in the production of signs.

✓ (2) (Essential) The component items indicated in (1) above will be assembled into separate, composite sets, in kit form. Each set will be of such configuration that it can be inserted into a carrying case.

- (a) Carrying case.
- (b) Sign-backing material.
- (c) Sign-facing material.
- (d) Sign-painting device(s).
- (e) Accessories.

(3) (Desirable) The set will be of such low cost and simplified design that it will be considered a throwaway item; accordingly, replacement required by usage will be on the basis of individual components. This will permit low cost of replacement, facilitate the reduction of line items and reduce the administrative workload required to stock a new kit.

✓ (4) (Essential) The components in an assembled General Purpose Sign Set will be of such simple and flexible nature as to permit one man, unassisted, to fabricate a total of 25 signs in a period of approximately 60 minutes. This requirement is based on observation of untrained personnel using a similar type of kit. This performance standard is the average time required to construct this number of signs using a similar kit.

(5) (Desirable) The weight of the assembled kit, including carrying case, will not exceed 100 pounds. This is believed to be a reasonable maximum load for one man to handle in loading and off-loading the kit from a vehicle. This makes the kit portable. The current item cannot be handled by one man.

(6) (Desirable) Instructions for use of the kit should be placed on the inside of the lid or cover.

b. Reliability Concept.

(1) (Essential) Traffic signs produced by this kit will have a probability of being easily read in adverse conditions of light after

exposure (i.e., actual use) for a period of 1 month. (Desirable) 2 months. This Agency does not have the capability of measuring adverse conditions. Such conditions would presumably be poor visibility because of precipitation, fog, or lack of any light from natural or artificial sources which would preclude an individual from reading a sign and having sufficient time to react normally.

✓ (2) (Essential) The kit must be capable of transportation, without impairment of its capabilities.

(3) (Desirable) The kit will be capable of delivery in phase II of airborne operations.

(4) (Desirable) The container, or carrying case, will provide for the components contained therein, protection from the adverse effects of moisture, dust, fungus, and chemical agents. The kit must be usable after normal and extended storage under adverse conditions. Less protection would probably render the kit unusable.

✓ (5) (Essential) The assembled kit (i.e., carrying case with components secured therein according to specifications provided) will be capable of transportation over rough terrain in a 1/4-ton truck without impairment of the operational capabilities of the various components. The kit is designed to be transportable in this type of vehicle as a common case. This is a tactical vehicle and will be utilized in areas where the terrain is rough and no roads exist. The sign-making kit will provide for transportability to the areas where no roads exist and a need exists for the sign-making capability.

(6) (Desirable) The kit, including all components will have an anticipated storage life of 5 years. Requirement set forth regarded by judgment to be reasonable life expectancy for an unsophisticated item of materiel. This type of equipment could very well stay in the logistics pipeline for this period.

c. Maintenance Concept.

✓ (1) (Essential) Scheduled maintenance will consist of checking contents at user level to determine if all components are present and in apparently usable condition. Simple maintenance requirement is necessary to save time and equipment at the user level. This is an unsophisticated item of materiel and extended maintenance should not be required.

✓ (2) (Essential) Separate individual components will be replaced at organization level by normally assigned personnel; no special skills or MOS will be required.

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✓ (3) (Desirable) No maintenance above organizational level will be required.

2. The following items are suggested as components for the Portable Sign-Making Kit:

Staple, Tacker	FSN 5315-889-2604✓
Tacker, Staple	FSN 5120-889-1796✓
Double Coated Tape	FSN 7510-935-5848✓
Marker	FSN 7520-227-7137✓
Ink, Marker	FSN 7510-281-4432✓
Stencil Board	FSN 9310-282-2501✓
Knife, Craftsman's	FSN 5110-288-8717✓
Lettering Guide	FSN 6675-065-0043✓
Ruler, Wood	FSN 7510-161-6218✓
Signboard, Blank	FSN 9905-089-5472✓
Tape, Reflective	FSN 9390-949-7552✓
Vinyl Letters	(A source is the Dennison Manufacturing Company, Framingham, MS 01701.)

Scissors

Hammer

Nails

COMPONENTS LIST

1.	**Sign-Backing Material				
2.	Stencil Board	9310-282-2501	11.	Lettering Guide	6675-065-0043
3.	Sign-Facing Material	9905-089-5472	12.	Ink, 4 oz. can	7510-281-4432
4.	***Rubber Letters		13.	Scissors	5110-255-0420
5.	Double Faced Tape	7510-935-5848	14.	Hammer	5120-223-9124
6.	Staples, 3/8"	5315-889-2604	15.	Staple Gun	5120-889-1796
7.	***Spray Ink		16.	Roofing Nails	5315-664-7032
8.	Ruler, 24"	7510-161-6218	17.	**Vinyl, Self-Sticking Letters	
9.	Reflective Tape	9390-949-7552	18.	Ink Marker	7520-227-7137
10.	Utility Knife	5110-288-8717	19.	*Carrying Case	

*Skydyne, Inc., Port Jervis, NY 12771
**W. H. Brady Co., Milwaukee, WISC 53201
***Dewey Carter Co., Doylestown, PA 18901



APPENDIX C
DEPARTMENT OF THE ARMY 221 Shumaker/st/780-4747
HEADQUARTERS, UNITED STATES ARMY MILITARY POLICE SCHOOL
FORT GORDON, GEORGIA 30905

ATSJ-CTD-MS


7 NOV 1973

SUBJECT: Portable Sign-Making Kit

Commander
US Army Land Warfare Laboratories
ATTN: AMXLW-DES (Mr. Norman Leibel)
Aberdeen Proving Grounds, Maryland 21005

1. Reference: FONECON between Mr. Leibel, Land Warfare Laboratories, and LT Shumaker, USAMPS, on 29 October 1973.
2. The portable sign-making kit was designed and assembled by LWL even though the majority of the components are replenishable through normal supply channels.
3. The kit was distributed to eight military police battalions for testing and evaluation for a minimum of 30 days. The reports of the tests indicated that the kits performed in an excellent manner and fulfilled a need for a readily available, easy to use, and quick to assemble sign-making capability.
4. USAMPS recommends that emphasis be placed upon procurement and distribution of the portable sign-making kit.

FOR THE COMMANDANT:


DANIEL J. KING
Major, MPC
Assistant Adjutant

DISPOSITION FORM

For use of this form, see AR 340-15; the proponent agency is The Adjutant General's Office.


REFERENCE OR OFFICE SYMBOL

SUBJECT

EVALUATION OF PORTABLE SIGN-MAKING KIT

TO Commanding Officer FROM Commander DATE 30 May 1973 CMT 1
 U.S. Army Land Warfare Laboratory 4th MP Company 1LT CLARK C RICE/MPC/3210
 Aberdeen Proving Ground Fort Carson, CO 80913

1. When inspecting kit initially there was some slight water damage to the stencil paper in the extra material accompanying the kit.
2. The photographs of the sign examples were incomplete as instructions on the use of the sign kit. A two hour block of instruction was presented to company personnel which seemed to be sufficient in familiarizing personnel in the capabilities and operation of the kit.
3. The sign material tested over 60 day period proved satisfactory. Those signs made with the ink proved to be less than satisfactory, the ink flaked off the sign material making them unreadable.
4. The components of the kit were sufficient to complete 100 signs. This kit meets the needs of this unit, with the addition of an olive drab sign material that could be a very valuable tool in aiding us to accomplish our mission.
5. The sign kit case was very satisfactory in protecting components of the kit.


 DAVID H RIPPETO
 CPT, MP
 Commanding

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APPENDIX E

DEPARTMENT OF THE ARMY
Headquarters, Fort Wainwright
APO Seattle 98731
Office of the Provost Marshal

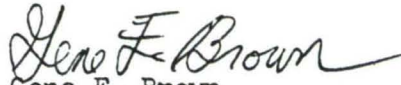
ARWPM

22 March 73

SUBJECT: Field Evaluation of Portable Sign-making Kit

LTC Huston C. Hill
U.S. Army Combat Development Command
Military Police Agency
Fort Gordon, Georgia 30905

1. Attached to this letter is the sign kit questionnaire.
2. This sign kit was tested under sub zero temperatures at Fort Wainwright, Alaska with positive results.
3. The Portable Sign-making Kit is a tremendous improvement over existing sign-making equipment used by the Military Police in the past.


Gene F. Brown
1LT, MPC
Operations Officer

APPENDIX F

DEPARTMENT OF THE ARMY
227th Military Police Detachment (Stockade)
Fort Clayton, Canal Zone

SCARPAA-CF

6 July 1973

SUBJECT: Field Evaluation of Portable Sign-Making Kit

Commander
US Army Land Warfare Laboratory
Aberdeen Proving Ground, Maryland 21005

1. Ref letter CDCMP-M, HQ US Army Combat Development Command Military Police Agency, 31 March 1972, subject as above and subsequent "Proposed Evaluation Plan" same title, the following report with attached questionnaire is provided.
2. The kit has been evaluated under climatic conditions peculiar to the Panama Canal Zone area which consists of primarily a rainy and dry season with temperatures ranging constantly between 85-95 degrees. The evaluation below has been keyed to applicable paragraphs of "Proposed Evaluation Plan" per your request.
 - a. The sign-making kit was not damaged when received.
 - b. A study was made of the photograph sign examples found in the sign kit prior to fabricating signs.
 - c. A quantity of signs used were made and erected using kit components in an effort to determine the durability of same. The signs were exposed directly and indirectly to the weather covering a four (4) month period (March, April, May, June). These months were chosen because the month of March was during the dry season and April, May and June the rainy season. It was discovered that all signs made and erected from the new kits under stated climatic conditions were found to be exceptionally durable and superior to the silk-screen process currently used by Military Police units (see photographs enclosed).
 - d. These signs were inspected periodically (weekly) during the period conveyed above and were still intact and legible on 30 June 1973.
 - e. The kit is sufficient to fabricate a minimum of 100 or more signs of different size, type and shape.
 - f. The kit is considered suitable to the needs of the Military Police.
 - g. Comparing the new kit to kit presently used by Military Police, the new kit is considered superior in all respects.

SCARPAA-CF

6 July 1973

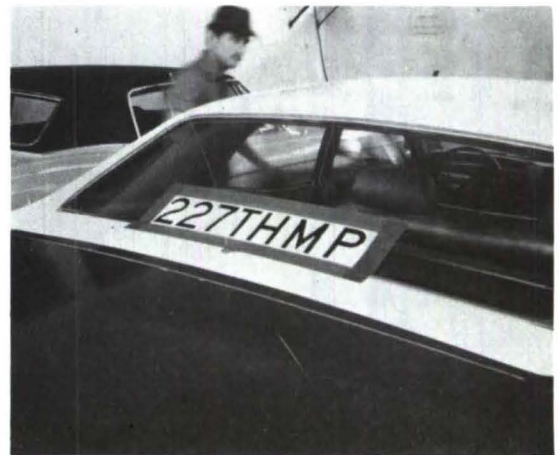
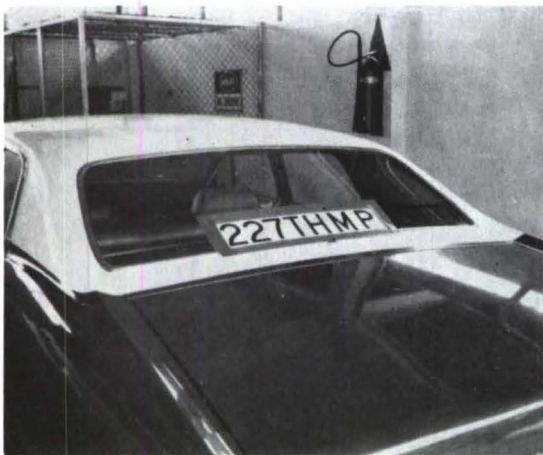
SUBJECT: Field Evaluation of Portable Sign-Making Kit

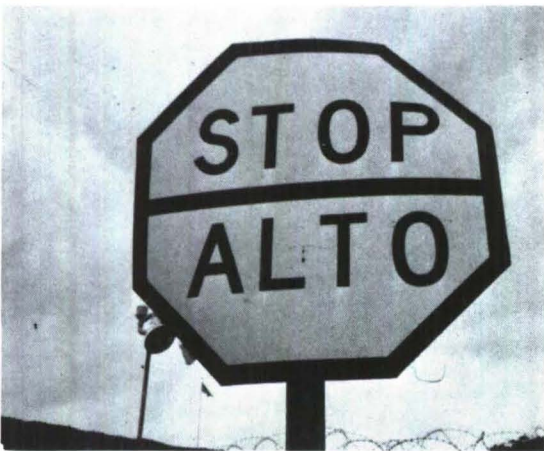
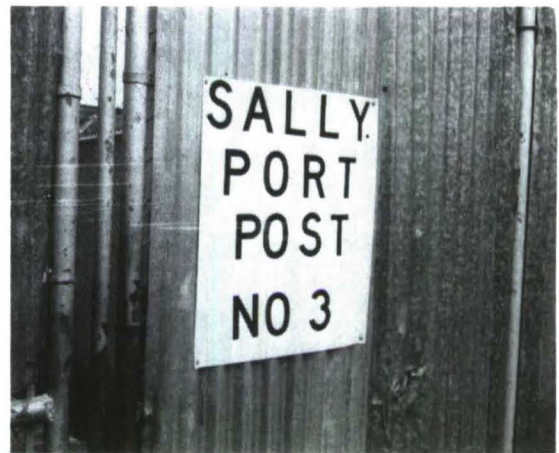
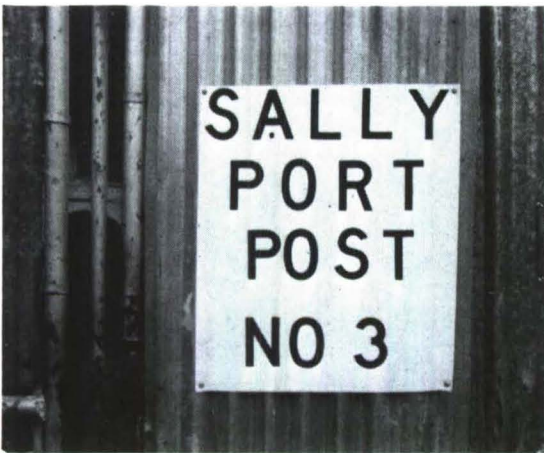
h. The kit case was evaluated for durability, configuration, weight and component packaging and is considered to be outstanding in every respect.

3. Thank you very much for the kit and the opportunity to participate in the portable sign-making kit evaluation.


WAYNE WINCHESTER
CPT, MPC
Commanding

2 Incl
as





APPENDIX G

503d Military Police Battalion
Fort Bragg, North Carolina 28307

AJBMP-AL

25 April 1973

SUBJECT: Field Evaluation of Portable Sign-Making Kit

THRU: Commander
16th Military Police Group
ATTN: AJBMP-SO
Fort Bragg, North Carolina 28307

Commander
XVIII Airborne Corps and Fort Bragg
ATTN: AJBPM
Fort Bragg, North Carolina 28307

TO: Commander
US Army Combat Developments Command MP Agency
ATTN: CDCMP-M
Fort Gordon, Georgia 30905

1. References:

a. Letter, CDCMP-M, HQ, US Army Combat Developments Command
Military Police Agency, 20 May 1971, subject: Proposed Projects.

b. Letter, CDCMP-M, HQ, US Army Combat Developments Command
Military Police Agency, 31 March 1972, subject: Portable Sign-Making Kits.

c. Letter, CDCMP-M, HQ, US Army Combat Developments Command
Military Police Agency, 12 December 1972, subject: Field Evaluation of
Portable Sign-Making Kit.

2. In compliance with reference 1c, a complete evaluation of subject
equipment was conducted by this headquarters. Preliminary instruction was
conducted with personnel who were involved in the testing and application of
the kit. The portable sign-making kit was tested and evaluated within the
parameters of the proposed evaluation plan, Inclosure 1.

25 April 1973

SUBJECT: Field Evaluation of Portable Sign-Making Kit

3. Evaluation Procedures: Construction of various types of signs, utilizing all components of the kit, was completed in garrison and in the field while this headquarters participated in Exercise Exotic Dancer VI. Signs were fabricated by numerous personnel to determine what degree of training was needed to effectively produce high quality signs and all materials were subjected to local climatic elements.

4. Evaluation:

a. The kit was received intact. The configuration, weight, durability and component packing enabled the kit to be stored, transported and set up for use in garrison and in the field with ease. The shipping container protected all components from damage during transporting and contact with the elements.

b. The photographs of sign examples and the instruction sheet were excellent but a more detailed instruction sheet, elaborating on various applications of materiel, would enhance the ability of the user to produce a greater variation of signs and completely utilize all components to full application.

c. Approximately seventy signs were fabricated, using all components of the kit. Samples were exposed to the elements, which included heavy rain, fog, 35 degree to 75 degree temperatures, mud, oil and winds up to 30 MPH. These signs were inspected at intervals during a 60 day period and remained intact and legible. Those which became dirty with mud and oil were cleaned with no adverse effects to the condition of the sign.

d. It appears that the combination of materials in the kit would be sufficient for fabricating over 100 signs before replacement components would be required.

e. Effective utilization of components for military police needs were as follows:

(1) Sign backing materiel - Very durable under all conditions, but is more effective when backing support is added due to its flexibility. Due to the non-porous quality however, only the stick-on components could be utilized on these sheets. The spray ink and paint would not adhere to it.

(2) Stencil board - a necessity for stencil production and very effective.

(3) Reflective sign facing material - Best utilized in traffic signs and, due to its reflective qualities, is essential to the kit.

(4) Rubber letters - Mainly used for stencils; would have been very effective if the spray components of the kit would have adhered to the sign backing materiel. They would be much easier to use if they were not as flexible as they are.

25 April 1973

SUBJECT: Field Evaluation of Portable Sign-Making Kit

- (5) Double faced tape - Essential to mount the sign facing.
- (6) Staple gun w/staples - Essential for mounting signs.
- (7) Reflective tape - Very effective for use in production of traffic signs.
- (8) Utility knife - Effective in cutting stencils.
- (9) Lettering guide - Very difficult to use; perhaps a substitute item would be better as this item was not an asset to the kit.
- (10) Marker w/4 oz ink cans - A necessity for free hand type production of signs. With practice an individual could effectively produce many signs of high quality with this item.
- (11) Scissors, hammer and roofing nails - All essential components.
- (12) Vinyl letters - Considered the most effective practical component of the kit. The professional results and ease of application made them essential to the kit.
- (13) Spray ink - Considered worthless as it would not effectively adhere to any component of the kit.

5. This kit far surpasses the silk screen kit now presently authorized in the military police equipment inventory. Due to the compactness, simplicity, durability and quality of signs produced, this would be very effective and useful for fulfilling the requirements of the Military Police Operations.

6. Recommendations:

a. Make a sign backing material that would be more porous and less flexible. This would allow application of spray materiel without flaking or cracking. A larger set of sign backing sheets should be added to enable full use of the 4" vinyl letters.

b. Use a different type of spray ink, one with a quality to adhere to any surface. A low pressure dispenser should be used with the ink to eliminate some of the over spray experienced in producing stencil signs.

c. Add a wider roll of reflective tape to enable greater variety of applications in traffic signs.

d. Add a smaller set of vinyl letters for greater variety in letter application and put a greater back up supply of vinyl letters in the kit. Also add a roll of vinyl tape for the purpose of adding symbols to signs while keeping a compatability with the vinyl letters.

AJBMP-AL

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e. Eliminate the lettering guide and add a set of 3" and 4" metal stencils. This would expedite the cutting of stencils and produce a more professional stencil type sign.

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EUGENE R. CROMARTIE
LTC, MP
Commanding

APPENDIX H

LT Skunk (R)

DEPARTMENT OF THE ARMY
1st Military Police Company
1st Infantry Division (Mech)
Fort Riley, Kansas 66442

AFZMMP

15 August 1973

SUBJECT: Test and Evaluation of Portable Sign Making Kits

CPT David B. Amick
Assistant Adjutant
HQ, United States Military Police School
Fort Gordon, Georgia 30905

1. The Portable Sign Making Kit sent to this unit has provided an essential asset peculiar to this unit, as a Divisional MP Company. In support of the 1st Infantry Division (Mech), we are taxed with numerous commitments for signs. We furnish route signs, speed limit signs, unit designation signs, and other traffic control signs.

2. Because of the compactness of the sign material and the portability, it is easier to control the components necessary to complete the signs needed. However, the following problems have arisen:

a. Although the kit is portable and compact, it would be preferable if it was smaller in size to facilitate storage.

b. Components for the kit, although expendable, were not in adequate supply. Suggest that the kit be filled and an additional 30 day back up of supplies be provided with the kit.

c. In preparation for a unit move out, all sign reflectorized material and backing were consumed; plus letters M, P, H, and numerals 0, 1, 2, 3, and 5, were utilized and approximately 100 traffic signs were made.



WILLIAM J SCOTT
CPT, MPC
Commanding

APPENDIX I

DEPARTMENT OF THE ARMY
HEADQUARTERS 720TH MILITARY POLICE BATTALION
Fort Hood, Texas 76544

AI BA-720-CDR

31 May 1973

SUBJECT: Evaluation; Portable Sign Making Kit

Commanding Officer
U. S. Army Land Warfare Laboratory
Aberdeen Proving Ground, Maryland 21005

1. The kit was assigned to this battalion in January 1973 and was first used to provide guide signs for the funeral of the late President, the Honorable Lyndon Baines Johnson.
2. At the Johnson Funeral, five signs were exposed to high wind and almost constant rain for a three day period. We found that the backing repelled the moisture and that both letters and backing were reusable.
3. The kit was next used, as planned, during FTX Gallant Hand 73. However, it was only used as an emergency measure because sign requirements for Gallant Hand were for subdued signs. More use of the kit could have been made if the kit contained a weather-proof backing material other than white, i.e., an "OD" color.
4. Additional use of the kit was made at activities on the Post for events at the Post Stadium and Armed Forces Day. It was extremely helpful when signs were needed on short notice and engineer requirements precluded their local fabrication.
5. We appreciate the opportunity to test this outstanding new development in traffic signs. This kit should be of great service to U. S. Army.

GERALD G. GIBBONS
LTC, MPC
Commanding

APPENDIX J

DEPARTMENT OF THE ARMY
Headquarters, 519th Military Police Battalion (Army)
Fort Meade, Maryland 20755

AFZI-ZBD

21 August 1973

SUBJECT: Test and Evaluation of Portable Sign Making Kit

Commander
U.S. Army Land Warfare Laboratory
ATTN: RDLW-DES
Aberdeen Proving Ground, MD 21005

The Portable Sign Making Kit was received on 22 January 1973. An inspection of the shipping container and contents revealed no damage.

On 24 January 1973 a quantity of signs were made utilizing the white polyethylene panels and vinyl letters and numbers and placed in the battalion parking lot. On 26 January 1973, five (5) signs were fabricated using the same materials and placed near the battalion chapel. Periodic inspections of these signs revealed the signs were still legible but had been blown off the wooden stakes. Closer inspection disclosed that the wind blowing from the rear of the signs had forced the heads of the roofing nails through the polyethylene panels. Prior to construction of additional signs this condition was eliminated by placing a small rubber washer on the roofing nail before attaching the sign to the wooden stake.

During the period 1 February 1973 - 13 June 1973 a total of thirty-three (33) signs were constructed using the same materials. Thirty day, sixty day and ninety day inspections were performed and all signs remained intact and legible. In May 1973 the sign making kit was evaluated by a detachment of personnel in a field environment while on TDY at Aitch, Pennsylvania. All signs fabricated remained in good condition throughout the exercise during all types of adverse weather conditions.

AFZI-ZBD

4 September 1973

SUBJECT: Test and Evaluation of Portable Sign Making Kit

The concept of a portable sign making kit was well received. However, the size and weight of the test kit are totally unacceptable. Deployment of the kit under a combat environment will be limited by the size vehicle available. The test kit requires two personnel to load/unload, will not readily fit in the $\frac{1}{4}$ ton truck with machinegun mount and radio and when open is too large for expedient handling by one person. Using the portable sign making kit as a model, a complete revision was made and is attached as inclosure #2. This proposed revision will reduce the kit by 67% in size, 40% in weight and 40 - 50% in overall cost. The revised kit can easily be handled by one man, readily transportable and when used the top serves as a work surface.

All credit for redesign of the kit should be accredited to PFC Eugene E. Cazeault, [REDACTED] HHD, 519th Military Police Battalion (Army), Fort Meade, Maryland 20755.

Attached as inclosure #1 is the questionnaire provided with the sign making kit. The overall rating by all personnel testing the kit was satisfactory with exception to those items mentioned above.

FOR THE COMMANDER:

2 Incl
as

Charles B Brown
CHARLES B. BROWN
CPT, MPC
Adjutant

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